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The antioxidant properties of stevioside under the influence of heavy metals

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Abstract

This paper deals with the study of the antioxidant activity of diterpene glycoside of stevioside in the absence of stress factors and under the influence of heavy metals. Results showed different response of stevioside to - it reduced catalase activity by 34% as compared to control, but virtually had no effect on the enzymatic activity of an ascorbate peroxidase. Heavy metals at suboptimal concentrations (10 µM) also did not significantly change the activity of the studied enzymes. Growing of plants at a sublethal concentration of pollutants (1 mM) was accompanied by a sharp increase in the activity of ascorbate peroxidase, and, otherwise, decrease in catalase activity. Plants pretreatment with diterpene glycosides ensured reduction of the negative effects of heavy metals on the activity of these enzymes, i.e., ascorbate peroxidase activity was lower and catalase activity was higher. The influence of stevioside also led to 4-fold increase in the content of non-enzymatic antioxidant - proline that may indicate an increasing stress resistance of plants to negative environmental factors.

Keywords

Ascorbate peroxidase, Catalase, Heavy metals, Proline, Steviozide, Triticum aestivumL.